

Preliminary Amendment  
Application No.: filed concurrently  
February 1, 2005

IN THE CLAIMS

Please substitute the following claims for the pending claims with the same numbers respectively:

Claim 1 (Original): A nitride semiconductor light-emitting device comprising: a substrate; a layered portion emitting light disposed on the substrate, the layered portion including an n-type semiconductor layer, an active layer, and a p-type semiconductor layer; and an n electrode,

wherein the layered portion has an inclined periphery at which the surface of the n-type semiconductor layer is exposed, and the n electrode is disposed on the surface of the n-type semiconductor layer.

Claim 2 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 1, wherein the n electrode surrounds the layered portion.

Claim 3 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim 1 or 2~~ claim 1, wherein the n electrode continuously extends to the lower surface of the substrate through the side surfaces of the substrate.

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Claim 4 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 3~~ claim 1, wherein the layered portion has a circular shape.

Claim 5 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 3~~ claim 1, wherein the layered portion has a hexagonal shape.

Claim 6 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 5~~ claim 1, wherein the nitride semiconductor light-emitting device has a plurality of the layered portion emitting light.

Claim 7 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 6, wherein the respective n-electrodes for the layered portions are connected to each other to define a common electrode.

Claim 8 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 7, wherein the layered portions have respective p ohmic electrodes in ohmic contact with the respective p-type semiconductor layers, and the p ohmic electrodes are connected to each other.

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Claim 9 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1, 2, and 4 to 8~~ claim 1, further comprising a reflection layer covering the layered portion.

Claim 10 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 9, wherein the reflection layer is of a metal layer covering the layered portion with an insulating layer therebetween.

Claim 11 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 10, wherein the metal layer serves as a connecting electrode for connecting the p ohmic electrodes of the p-type semiconductor layers of the layered portions.

Claim 12 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 9, wherein the reflection layer comprises a dielectric multilayer film.

Claim 13 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 12~~ claim

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1, wherein the inclined periphery has a convex surface protuberating outward.

Claim 14 (Original): A nitride semiconductor light-emitting device comprising: an n-type nitride semiconductor layer; p-type nitride semiconductor layer; and a luminescent layer formed of a nitride semiconductor between the n-type nitride semiconductor layer and the p-type nitride semiconductor layer,

wherein at least the p-type nitride semiconductor layer and the luminescent layer define a frustum layered composite, and the layered composite is embedded in a metal member so that the periphery of the layered composite is isolated.

Claim 15 (Original): A nitride semiconductor light-emitting device comprising: an n-type nitride semiconductor layer; p-type nitride semiconductor layer; and a luminescent layer formed of a nitride semiconductor between the n-type nitride semiconductor layer and the p-type nitride semiconductor layer,

wherein at least the p-type nitride semiconductor layer and the luminescent layer define a frustum layered composite, and the layered composite is supported by a metal member opposing the surface of the layered composite.

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Claim 16 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim 1 or 2~~ claim 1, wherein the surface of the metal member opposite to the surface opposing to the layered composite is flat.

Claim 17 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claim 1 to 3~~ claim 1, further comprising a transparent electrode on one of two opposing surfaces of the n-type nitride semiconductor layer, and the other surface has the layered composite.

Claim 18 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 4, wherein the transparent electrode comprises ITO.

Claim 19 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 5~~ claim 1, further comprising a p electrode containing Rh, the p electrode being disposed between the layered composite and the metal member to establish an ohmic contact with the p-type nitride semiconductor layer.

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Claim 20 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 6~~ claim 1, wherein the layered composite includes part of the n-type nitride semiconductor layer.

Claim 21 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 6~~ claim 1, wherein the layered composite includes the entire n-type nitride semiconductor layer.

Claim 22 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 8~~ claim 1, wherein the metal member has a thickness of 50  $\mu\text{m}$  or more.

Claim 23 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 9~~ claim 1, wherein the nitride semiconductor light-emitting device has a plurality of the layered composite.

Claim 24 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 10, wherein the n-type nitride semiconductor layer is common to the plurality of the

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layered composites and the layered composites are disposed on the common n-type nitride semiconductor layer.

Claim 25 (Currently amended): The nitride semiconductor light-emitting device according to ~~Claim~~ claim 10, wherein the layered composites have the respective n-type nitride semiconductor layers.

Claim 26 (Currently amended): The nitride semiconductor light-emitting device according to ~~any one of Claims 1 to 12~~ claim 1, wherein the metal member comprises a metal or an alloy containing the metal, the metal being selected from the group including Ti, Ag, Al, Ni, Pt, Au, Rh, Cu, and W.

Claim 27 (Original): A method for manufacturing a light-emitting device, comprising:

the first step of forming an n-type semiconductor layer, a luminescent layer, and a p-type semiconductor layer on a substrate;

the second step of forming frustum luminescent regions including the p-type semiconductor layer and the luminescent layer;

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the third step of forming a metal member so as to cover the luminescent layer;

the fourth step of removing the substrate; and

the fifth step of cutting the metal member between the luminescent regions to separate light-emitting devices from one another.

Claim 28 (Currently amended): The method for manufacturing a light emitting device according to ~~Claim~~ claim 14, wherein in the third step, the metal member is formed by plating.

Claim 29 (Original): A semiconductor light-emitting device comprising a structure including a first conductivity type layer; a second conductivity type layer; and a luminescent layer between the first and second conductivity type layers,

wherein at least part of the structure defines a structured portion having a lower surface with a width in sectional view, an upper surface with a smaller width than the width of the lower surface in sectional view, and a inclined periphery, and

wherein the periphery is defined by first side surfaces, each having a width increasing from the lower surface side toward the upper surface side, and second side surfaces, each having a width



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increasing from the upper surface side toward the lower surface side.

Claim 30 (Currently amended): The semiconductor light-emitting device according to ~~Claim~~ claim 29, wherein the first side surfaces are formed in the corners defined by the sides of the lower surface.

Claim 31 (Currently amended): The semiconductor light-emitting device according to ~~Claim~~ claim 29, wherein the luminescent layer is disposed inside the structured portion.

Claim 32 (Currently amended): The semiconductor light-emitting device according to ~~Claim~~ claim 29, wherein the lower surface has a square or polygonal shape, the second side surfaces are formed on the sides of the lower surface, and the first side surfaces are formed in the corners of the lower surface.

Claim 33 (Currently amended): The semiconductor light-emitting device according to ~~Claim~~ claim 29, wherein the structured portion is of frustum.

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Claim 34 (Currently amended): The semiconductor light-emitting device according to ~~Claim~~ claim 29, wherein the first side surfaces are curved to be convex outward.

Claim 35 (Currently amended): The semiconductor light-emitting device according to ~~Claim~~ claim 29, wherein the first side surfaces define rounded sides of the lower surface and the upper surface, and the curvature radius of the rounded sides of the upper surface is larger than that of the lower surface.

Claim 36 (Currently amended): The light-emitting device according to ~~Claim~~ claim 29, further including an electrode structure, wherein the light-emitting device has a plurality of the structured portion, and the electrode structure is provided so that the structured portions substantially simultaneously emit light.

Claim 37 (Currently amended): The light-emitting device according to ~~Claim~~ claim 29, further comprising a pair of a positive electrode and a negative electrode on the same surface side over the upper surface of the structured portion.

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Claim 38 (Currently amended): The light-emitting device according to ~~Claim~~ claim 37, wherein one of the pair of the electrodes covers part of the periphery of the structured portion.

Claim 39 (Currently amended): The light-emitting device according to ~~Claim~~ claim 29, wherein the light-emitting device has a plurality of the structured portion separately disposed on a substrate, and further includes electrodes disposed so that the structured portions substantially simultaneously emit light.

Claim 40 (Currently amended): The light-emitting device according to ~~Claim~~ claim 37, wherein the upper surface of the structured portion defines a mounting surface which opposes a mounting base when the light-emitting device is disposed on the mounting base, and wherein one of the pair of the electrodes is disposed on a substrate, and the other comprises a wiring structure disposed on the mounting base side so as to be connected to the upper surfaces of the separately disposed plurality of the structured portions.

Claim 41 (Currently amended): The light-emitting device according to ~~Claim~~ claim 29, further comprising a pair of electrodes disposed separately on the upper surface side of the

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structured portion and on the lower surface side, wherein the pair of the electrodes are respectively disposed on the surface of the first conductivity type layer and the surface of the second conductivity type layer.

Claim 42 (Currently amended): The light-emitting device according to ~~Claim~~ claim 41, further comprising a light-transmissive insulating layer covering the periphery of the structured portion; and a filling member around the periphery with the light-transmissive insulating layer therebetween.

Claim 43 (Currently amended): The light-emitting device according to ~~Claim~~ claim 41, wherein the light-emitting device has a plurality of the structured portion, and the structured portions are separated from one another by a protruding filling member.

Claim 44 (Currently amended): The light-emitting device according to ~~Claim~~ claim 42, wherein the luminescent layer is disposed inside the structured portion, and the filling member protrudes below the luminescent layer toward the lower surface side of the structured portion.

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Claim 45 (Currently amended): A light-emitting apparatus comprising: ~~[[the]]~~ a light-emitting device as set forth in any one of Claims 29 to 44, comprising a structure including a first conductivity type layer; a second conductivity type layer; and a luminescent layer between the first and second conductivity type layers,

wherein at least part of the structure defines a structured portion having a lower surface with a width in sectional view, an upper surface with a smaller width than the width of the lower surface in sectional view, and a inclined periphery, and

wherein the periphery is defined by first side surfaces, each having a width increasing from the lower surface side toward the upper surface side, and second side surfaces, each having a width increasing from the upper surface side toward the lower surface side, and

a mounting portion on which the light-emitting device is placed, wherein the light emitting device is mounted on a support and then placed on the mounting portion.

Claim 46 (Currently amended): The light-emitting apparatus ~~compositing: the~~ comprising: a light-emitting device as set forth in any one of Claims 29 to 44, comprising a structure including a first conductivity type layer; a second conductivity type layer;

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and a luminescent layer between the first and second conductivity type layers,

wherein at least part of the structure defines a structured portion having a lower surface with a width in sectional view, an upper surface with a smaller width than the width of the lower surface in sectional view, and a inclined periphery, and

wherein the periphery is defined by first side surfaces, each having a width increasing from the lower surface side toward the upper surface side, and second side surfaces, each having a width increasing from the upper surface side toward the lower surface side, and

a light-transforming member for transforming part of light emitted from the light-emitting device into light having a different wavelength.

Claim 47 (Currently amended): The light-emitting apparatus according to ~~Claim 45 or 46~~ claim 45, wherein the light-transforming member comprises an aluminum garnet phosphor containing Al; at least one element selected from the group consisting of Y, Lu, Sc, La, Gd, Tb, Eu, and Sm; one of Ga and In, and at least one element selected from the rare earth elements.

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Claim 48 (Currently amended): The light-emitting apparatus according to ~~Claim 45 or 46~~ claim 45, wherein the light-transforming member comprises a phosphor expressed by  $(\text{Re}_{1-x}\text{R}_x)_3(\text{Al}_{1-y}\text{Ga}_y)_5\text{O}_{12}$  ( $0 < x < 1$  and  $0 \leq y \leq 1$ , wherein Re represents at least one element selected from the group consisting of Y, Gd, La, Lu, Tb, and Sm; and R represents Ce or Ce and Pr).

Claim 49 (Currently amended): The light-emitting apparatus according to ~~Claim 45 or 46~~ claim 45, wherein the light-transforming member comprises a nitride phosphor containing N; at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, and Zn; and at least one element selected from the group consisting of C, Si, Ge, Sn, Ti, Zr, and Hf, and is activated by at least one element selected from the rear earth elements.

Claim 50 (Currently amended): The light-emitting apparatus according to ~~Claim 45 or 46~~ claim 45, wherein the nitride phosphor is expressed by the general formula  $\text{L}_x\text{Si}_y\text{N}_{(2/3x + 4/3y)}:\text{Eu}$  or  $\text{L}_x\text{Si}_y\text{O}_z\text{N}_{(2/3x + 4/3y - 2/3z)}:\text{Eu}$  (L represents Sr, Ca, or Sr and Ca).

Please add new claims 51-54 as follows.

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Claim 51 (New): The light-emitting apparatus according to claim 46, wherein the light-transforming member comprises an aluminum garnet phosphor containing Al; at least one element selected from the group consisting of Y, Lu, Sc, La, Gd, Tb, Eu, and Sm; one of Ga and In, and at least one element selected from the rare earth elements.

Claim 52 (New): The light-emitting apparatus according to claim 46, wherein the light-transforming member comprises a phosphor expressed by  $(\text{Re}_{1-x}\text{R}_x)_3(\text{Al}_{1-y}\text{Ga}_y)_5\text{O}_{12}$  ( $0 < x < 1$  and  $0 \leq y \leq 1$ , wherein Re represents at least one element selected from the group consisting of Y, Gd, La, Lu, Tb, and Sm; and R represents Ce or Ce and Pr).

Claim 53 (New): The light-emitting apparatus according to claim 46, wherein the light-transforming member comprises a nitride phosphor containing N; at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, and Zn; and at least one element selected from the group consisting of C, Si, Ge, Sn, Ti, Zr, and Hf, and is activated by at least one element selected from the rear earth elements.



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Claim 54 (New): The light-emitting apparatus according to claim 46, wherein the nitride phosphor is expressed by the general formula  $L_xSi_yN_{(2/3x + 4/3y)}:Eu$  or  $L_xSi_yO_zN_{(2/3x + 4/3y - 2/3z)}:Eu$  (L represents Sr, Ca, or Sr and Ca).